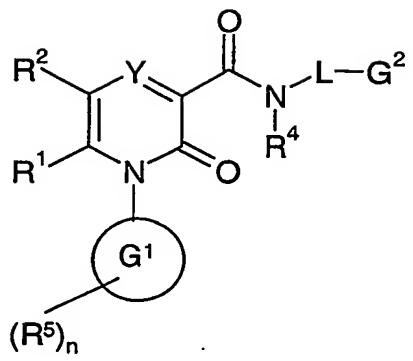
Claims

1. A compound of formula (I)



(I)

wherein:

Y represents CR^3 or N;

R^1 represents H or C1 to 6 alkyl;

R^2 represents:

i) CN, NO_2, OH, OSO_2R^{47}, O-C2 to 6 alkanoyl, CO_2R^{47}, CHO or C2 to 6 alkanoyl; or

ii) C1 to 6 alkoxy optionally substituted by OH, C1 to 6 alkoxy, CN, $NR^{54}R^{55}$, $CONR^{54}R^{55}$, $OCOR^{47}$ or one or more F atoms; or

iii) C3 to 6 saturated or partially unsaturated cycloalkyl optionally further substituted by C1 to 6 alkyl; or

iv) C4 to 7 saturated or partially unsaturated heterocyclic ring containing 1 to 3 heteroatoms independently selected from O, $S(O)_m$ and NR^{62} optionally further substituted by C1 to 6 alkyl; or

v) $CONR^{48}R^{49}$, $CONR^{50}NR^{48}R^{49}$, $C(=NOR^{52})R^{53}$, $C(=NH)NHOR^{52}$ or $NR^{48}R^{49}$; or

vi) C2 to 6 alkenyl or C2 to 6 alkynyl; said alkenyl or alkynyl group being optionally further substituted by C1 to 6 alkoxy or phenyl or a five- or six-membered heteroaromatic ring containing 1 to 3 heteroatoms independently selected from O, S and N; said phenyl or heteroaromatic ring being optionally further substituted by halogen, CN, C1 to 6 alkyl or C1 to 6 alkoxy; or

vii) C1 to 6 alkyl substituted by one or more F atoms; or

viii) C1 to 6 alkyl substituted by one or more groups selected from halogen, OH, oxo, azido, $NR^{48}R^{49}$, C1 to 6 alkoxy and C1 to 6 alkoxy substituted by one or more F atoms; or

ix) C1 to 6 alkyl substituted by phenyl or a five- or six-membered heteroaromatic ring containing 1 to 3 heteroatoms independently selected from O, S and N; said phenyl or heteroaromatic ring being optionally further substituted by halogen, CN, C1 to 6 alkyl or C1 to 6 alkoxy;

R^{48} and **R^{49}** independently represent H, OH, C1 to 6 alkoxy, C3 to 6 cycloalkyl, CHO, C2 to 6 alkanoyl, CO_2R^{50}, $C(X)NR^{63}R^{64}$ or C1 to 6 alkyl; said alkyl being optionally further substituted by OH, C1 to 4 alkoxy, C3 to 6 cycloalkyl, CN or phenyl or a five- or six-membered heteroaromatic ring containing 1 to 3 heteroatoms independently selected from O, S and N; said alkanoyl being optionally further substituted by CN;

X represent O or S;

or the group **$NR^{48}R^{49}$** together represents a saturated or partially unsaturated 5 to 7 membered azacyclic ring optionally incorporating one further heteroatom selected from O, S and NR^{56}; said azacyclic ring being optionally further substituted by one or more substituents selected from OR^{57} and C1 to 4 alkyl; said alkyl being optionally further substituted by OR^{57};

R^3 represents H or F;

G^1 represents phenyl or a five- or six-membered heteroaromatic ring containing 1 to 3 heteroatoms independently selected from O, S and N;

R^5 represents H, halogen, C1 to 6 alkyl, CN, C1 to 6 alkoxy, NO_2, $NR^{14}R^{15}$, C1 to 3 alkyl substituted by one or more F atoms or C1 to 3 alkoxy substituted by one or more F atoms;

R^{14} and R^{15} independently represent H or C1 to 3 alkyl; said alkyl being optionally further substituted by one or more F atoms;

n represents an integer 1, 2 or 3 and when n represents 2 or 3, each R^5 group is selected independently;

R^4 represents H or C1 to 6 alkyl; said alkyl being optionally further substituted by OH or C1 to 6 alkoxy;

or R^4 and **L** are joined together such that the group $-NR^4L$ represents a 5 to 7 membered azacyclic ring optionally incorporating one further heteroatom selected from O, S and NR^{16}; said ring being optionally further substituted by C1 to 6 alkyl or $NR^{60}R^{61}$; said alkyl being optionally further substituted by OH;

L represents a bond, O, NR^{29} or C1 to 6 alkyl; said alkyl optionally incorporating a heteroatom selected from O, S and NR^{16}; and said alkyl being optionally further substituted by OH or OMe;

G^2 represents a monocyclic ring system selected from:

i) phenyl or phenoxy,

ii) a 5 or 6 membered heteroaromatic ring containing one to three heteroatoms independently selected from O, S and N,

iii) a C3 to 6 saturated or partially unsaturated cycloalkyl, or

iv) a C4 to 7 saturated or partially unsaturated heterocyclic ring containing one or two heteroatoms independently selected from O, $S(O)_p$ and NR^{17} and optionally further incorporating a carbonyl group; or

G^2 represents a bicyclic ring system in which each of the two rings is independently selected from:

i) phenyl,

ii) a 5 or 6 membered heteroaromatic ring containing one to three heteroatoms independently selected from O, S and N,

iii) a C3 to 6 saturated or partially unsaturated cycloalkyl, or

iv) a C4 to 7 saturated or partially unsaturated heterocyclic ring containing one or two heteroatoms independently selected from O, $S(O)_p$ and NR^{17} and optionally further incorporating a carbonyl group;

and the two rings are either fused together, or are bonded directly together or are separated by a linker group selected from O, $S(O)_q$ or CH_2,

said monocyclic or bicyclic ring system being optionally further substituted by one to three substituents independently selected from CN, OH, C1 to 6 alkyl, C1 to 6 alkoxy, halogen, $NR^{18}R^{19}$, NO_2, OSO_2R^{38}, CO_2R^{20}, $C(=NH)NH_2$, $C(O)NR^{21}R^{22}$, $C(S)NR^{23}R^{24}$, $SC(=NH)NH_2$, $NR^{31}C(=NH)NH_2$, $S(O)_sR^{25}$, $SO_2NR^{26}R^{27}$, C1 to 3 alkoxy substituted by one or more F atoms and C1 to 3 alkyl substituted by SO_2R^{39} or by one or more F atoms; or

when L does not represent an bond, G^2 may also represent H;

at each occurrence, **m, p, q, s** and **t** independently represent an integer 0, 1 or 2;

R^{18} and R^{19} independently represent H, C1 to 6 alkyl, formyl, C2 to 6 alkanoyl, $S(O)_tR^{32}$ or $SO_2NR^{33}R^{34}$; said alkyl group being optionally further substituted by halogen, CN, C1 to 4 alkoxy or $CONR^{41}R^{42}$;

R^{25} represents H, C1 to 6 alkyl or C3 to 6 cycloalkyl; said alkyl group being optionally further substituted by one or more substituents selected independently from OH, CN, $CONR^{35}R^{36}$, CO_2R^{37}, $OCOR^{40}$, C3 to 6 cycloalkyl, a C4 to 7 saturated heterocyclic ring containing one or two heteroatoms independently selected from O, $S(O)_p$ and NR^{43} and phenyl or a 5 or 6 membered heteroaromatic ring containing one to three heteroatoms independently selected from O, S and N; said aromatic ring being optionally further substituted by one or more substituents selected independently from halogen, CN, C1 to 4 alkyl, C1 to 4 alkoxy, OH, $CONR^{44}R^{45}$, CO_2R^{46}, $S(O)_sR^{65}$ and $NHCOCH_3$;

R^{32} represents H, C1 to 6 alkyl or C3 to 6 cycloalkyl;

R^{16}, R^{17}, R^{20}, R^{21}, R^{22}, R^{23}, R^{24}, R^{26}, R^{27}, R^{29}, R^{31}, R^{33}, R^{34}, R^{35}, R^{36}, R^{37}, R^{38}, R^{39}, R^{40}, R^{41}, R^{42}, R^{43}, R^{44}, R^{45}, R^{46}, R^{47}, R^{50}, R^{52}, R^{53}, R^{54}, R^{55}, R^{56}, R^{57}, R^{60}, R^{61}, R^{62}, R^{63}, R^{64} **and** R^{65} independently represent H or C1 to 6 alkyl;

and pharmaceutically acceptable salts thereof.

2. A compound of formula (I), according to Claim 1, wherein Y represents CR^3.

3. A compound of formula (I), according to Claim 1 or Claim 2, wherein G^1 represents phenyl.

4. A compound of formula (I), according to any one of Claims 1 to 3, wherein R^5 represents Cl, CH_3, CN or CF_3.

5. A compound of formula (I), according to any one of Claims 1 to 4, or a pharmaceutically acceptable salt thereof, for use as a medicament.

6. A pharmaceutical formulation comprising a compound of formula (I), as defined in any one of Claims 1 to 4, or a pharmaceutically acceptable salt thereof, optionally in admixture with a pharmaceutically acceptable diluent or carrier.

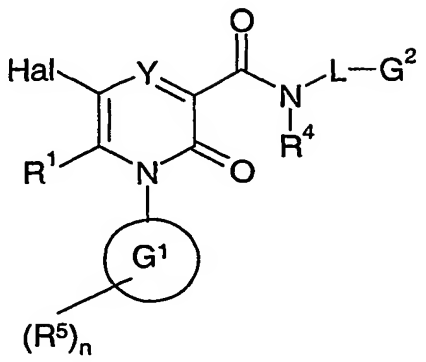
7. A method of treating, or reducing the risk of, a human disease or condition in which inhibition of neutrophil elastase activity is beneficial which comprises administering to a person suffering from or susceptible to such a disease or condition, a therapeutically effective amount of a compound of formula (I), as defined in any one of Claims 1 to 4, or a pharmaceutically acceptable salt thereof.

8. The use of a compound of formula (I) as defined in any one of Claims 1 to 4, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for the treatment or prophylaxis of human diseases or conditions in which inhibition of neutrophil elastase activity is beneficial.

9. The use of a compound of formula (I) as defined in any one of Claims 1 to 4, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for the treatment or prophylaxis of inflammatory diseases or conditions.

10. A process for the preparation of a compound of formula (I), as defined in any one of Claims 1 to 4, and optical isomers, racemates and tautomers thereof and pharmaceutically acceptable salts thereof, which comprises:

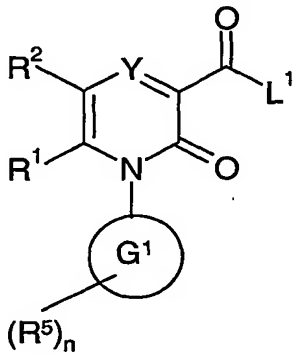
a) reacting a compound of formula (II)



(II)

with a nucleophilic equivalent of R^2, such as Cu(I)CN, an alkyl vinyl ether, an organo-tin compound, an organo boronic acid, a terminal alkyne or an alcohol and carbon monoxide; wherein R^1, R^2, R^4, R^5, Y, G^1, G^2, L and n are as defined in formula (I) and Hal represents a halogen atom, preferably bromo or iodo; or

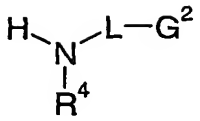
b) reacting a compound of formula (XV)



(XV)

wherein R^1, R^2, R^5, n, G^1 and Y are as defined in formula (I) and L^1 represents a leaving group,

with a compound of formula (IX) or a salt thereof



(IX)

wherein R^4, G^2 and L are as defined in formula (I);

and where desired or necessary converting the resultant compound of formula (I), or another salt thereof, into a pharmaceutically acceptable salt thereof; or converting one compound of formula (I) into another compound of formula (I); and where desired converting the resultant compound of formula (I) into an optical isomer thereof.